NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

REPLY TO ATTN OF GP

TO: USI/Scientific & Technical Information Division
Attention: Miss Winnie M. Morgan

FROM: GP/Office of Assistant General Counsel for Patent Matters

SUBJECT: Announcement of NASA-Owned U. S. Patents in STAR

In accordance with the procedures agreed upon by Code GP and Code USI, the attached NASA-owned U. S. Patent is being forwarded for abstracting and announcement in NASA STAR.

The following information is provided:

U. S. Patent No. : 3,447,850

Government or Corporate Employee : Motorola Inc.
Scottsdale, Arizona

Supplementary Corporate Source (if applicable) : Grumman Aircraft Engineering Co.,

NASA Patent Case No. : MSC-12168-1

NOTE - If this patent covers an invention made by a corporate employee of a NASA Contractor, the following is applicable:

Yes [XX] No [ ]

Pursuant to Section 305(a) of the National Aeronautics and Space Act, the name of the Administrator of NASA appears on the first page of the patent; however, the name of the actual inventor (author) appears at the heading of Column No. 1 of the Specification, following the words ". . . with respect to an invention of . . . "

Dorothy J. Jackson

Dorothy J. Jackson
Enclosure
Copy of Patent cited above

N71-18600

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FACILITY FORM 602

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NSC-12168-1

June 3, 1969 R. SAMSON 3,447,850

SEALED CABINETRY

Filed May 22, 1967

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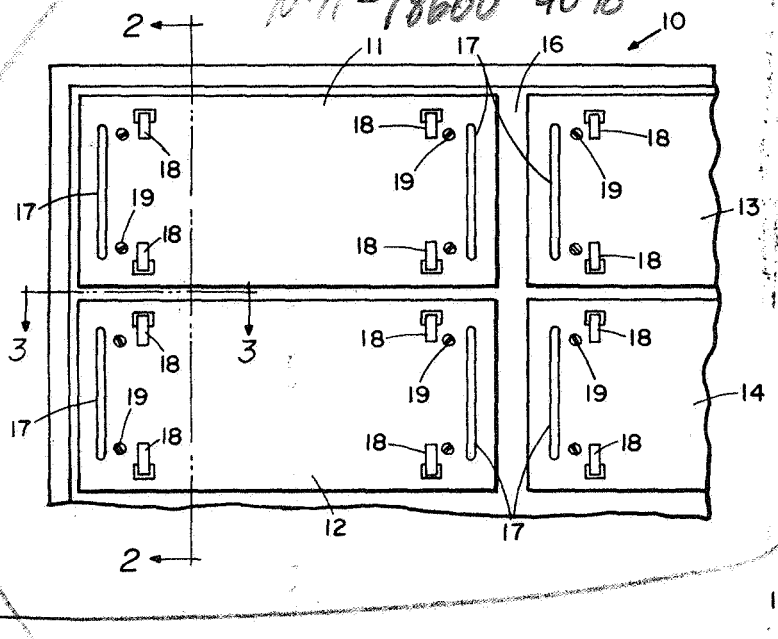

Fig. 1

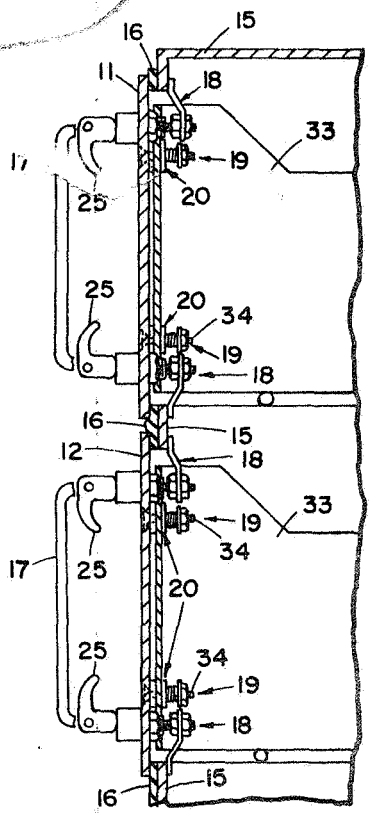

Fig. 2

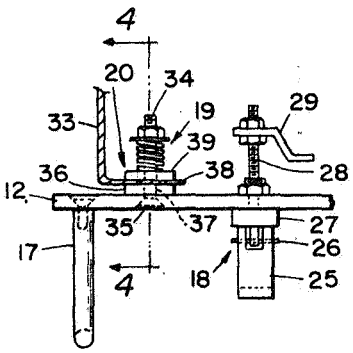

Fig. 3

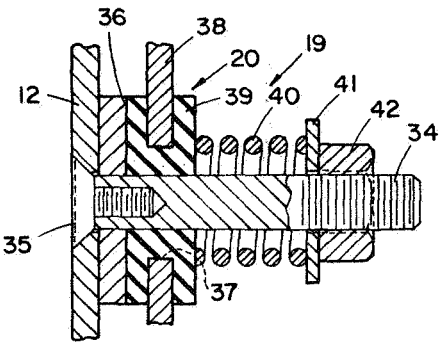

Fig. 4

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United States Patent Office 3,447,850 Patented June 3, 1969

3,447,850

SEALED CABINETRY

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Int. Cl. A47b 96/00, 88/20
U.S. Cl. 312—296 5 Claims

ABSTRACT OF THE DISCLOSURE

A cabinet sealed against electromagnetic radiation having a plurality of drawers with spring tensioned drawer fronts which float with respect to the drawer frame permitting the drawer front to seal against a deformable electromagnetic radiation sealing strip. Two adjacent drawer fronts may share a common sealing strip without leakage.

The invention described herein was made in the performance of work under a NASA contract and is subject to the provisions of Sec. 305 of the National Aeronautics and Space Act of 1958, Public Law 85-568 (72 Stat. 435; 42 U.S.C. 2457).

Background of the invention

This invention relates to cabinetry preferably useable with electronic equipment which seals out electromagnetic interfering radiation.

In the fabrication of electronic equipment, it is desired that electromagnetic radiation found in the environment in which the equipment is used not interfere with the circuitry within the cabinet. Such interference may cause malfunctions. Contrarywise, many circuits inside electronic equipment generate electromagnetic radiation and such radiation, under certain governmental regulations, must be sealed such that it does not interfere with other electronic equipment located adjacent the cabinet.

Much money and effort have been spent on sealing cabinets against the passage of electromagnetic radiation. One of the problems in cabinets housing relatively large drawers of electronic equipment which must be made removable is the completeness of the radiation seal wherein the drawer-front panel engages the front panel of the cabinet. To date such drawer panels have been made rigid with respect to the frame to enable the drawer of electronic equipment to be easily carried when taken out of the cabinet. As such, some electromagnetic radiation is inadvertently permitted to pass into or out of the electronic cabinet. It is desired that the electromagnetic radiation shielding be as secure as possible.

Summary of the invention

It is an object of this invention to provide apparatus which seals against passage of electromagnetic radiation.

It is another object of this invention to provide a drawer construction in which the frame and the front panel of the drawer are floating with respect to each other yet permit the front panel to support the drawer.

It is another object of this invention in connection with the immediately preceding object to provide a cabinet assembly having a plurality of drawers each with a separate floating drawer front panel which share a common radiation shielding strip and which provide good shielding against electromagnetic radiation.

Apparatus incorporating the teachings of the present invention includes a drawer type of electronic equipment in which a front panel is attached to the drawer frame under spring tension. Such spring tension is applied between the frame and the front panel at spaced apart peripheral locations. The front panel, being free to move with respect to the drawer, adjusts to any misalignments between the supporting frame and the drawer. By such adjustments, the drawer panel always is flat against the frame. As such, a constant sealing pressure is provided around the drawer panel periphery. Adjacent drawers may space a single sealing strip when both use this invention.

The drawing

FIG. 1 is a partial front elevation view of equipment utilizing the present invention.

FIG. 2 is a partial sectional view taken in the direction of the arrows along line 2—2 in FIG. 2.

FIG. 3 is a partial sectional view taken in the direction of the arrows along line 3—3 in FIG. 2 and shows a relationship of the drawer panel, spring tension mount, and drawer frame.

FIG. 4 is a sectional view taken along line 4—4 in FIG. 3 and showing details of the spring tension mount.

Description of the illustrative embodiment

Like numbers denote like parts and structural features in the various views. A cabinet assembly **10** has a plurality of removable drawers **11, 12, 13,** and **14.** The drawer front or cover panels engage cabinet frame front panels **15** at the deformable radiation sealing strip **16** (of known construction). Note that front or cover panels of adjacent drawers **11** and **12** share strip **16,** as will be later referred to.

Each drawer has a pair of handles **17** with which each drawer may be carried. Four drawer clamp assemblies **18** are provided to securely and evenly clamp the drawer panels to front panel **15.** The spring tension mounts **19** enable good radiation in sealing pressure and are of sufficient strength to permit the entire drawer with mounted equipment (not shown) to be carried by handle **17.**

The drawer clamp assemblies **18** each include a handle **25** pivoted about pin **26** and have a portion adjacent boss **27** which acts as a locking clamp, as is known in the art. Handle **25** also includes pin **28** which extends through boss **27** on either side of the drawer front panel to rotatable latch **29.** Latch **29** extends radially outward of pin **28** and engages the front panel **15** as best seen in FIG. 2. When it is desired to loosen the clamp, handle **25** is pulled outwardly and then rotated from moving latch **29** out of engagement with front panel **15,** thereby freeing the drawer for movement.

The spring tension mount **19** enabling the drawer front panels to evenly and securely engage deformable sealing strip **16** will now be described. Each drawer has a frame **33** on which the spring mount **19** is secured as at peripherally spaced-apart locations **20.** Mount **19** includes pin **34** having locking screw **35** threadingly engaged for securing the pin to a front panel, such as panels **11** and **12** (FIGS. 3 and 4). Radially outwardly extending flange **36** formed on pin **34** engages the back side of the drawer front panel. (See FIG. 4.) Frame **33** is provided with a pair of flanges **38** (FIGS. 2 and 3) respectively inwardly extending and in which location **20** is formed. Location **20** includes aperture **37** formed within flange **38** which receives Teflon washer **39** which slideably supports pin **34.** A strong spring **40** is disposed between the inner edge of Teflon washer **39** and stop washer **41** securely held by stop nut **42** on pin **34.** Spring **40** is under compression yieldably strongly urging front drawer panel **11** toward flange **38** of frame **33.** Stop nut **42** being threaded, is adjustable for altering the tension.

As shown in the illustrative embodiment, there are four spring-urged tension mounts per drawer, each one in juxtaposition of a drawer corner for evenly distribut-

ing the weight of the electronic apparatus (not shown) to the drawer front panel and also for providing an evenly distributed peripheral urging force on drawer panel **11**.

The mounts **19** in combination with the clamps **18** provide a floating drawer panel **11** which when clamped toward cabinet panel **15** securely engages sealing strip **16**. As best seen in FIG. 1, two adjacent drawer panels **11** and **12**, for example, are both compressing sealing strip **16**. With the arrangement of this invention, both panels are compressing strip **16** and with the floating drawer panel the compression on strip **16** by each panel is independent of the other. This arrangement prevents one drawer from compressing strip **16** more than another such that no electromagnetic radiation leaks are formed between a drawer front panel and a sealing strip because that sealing strip has been unduly compressed by an adjacent drawer front panel.

With reference to FIG. 2, frames **33** of the drawers may be rollingly mounted on the frame bar **45** of the cabinet **10** as by ball bearing slides schematically indicated by the circle **46**. Such slides are well known in the art and will not be further described as they are not pertinent to the present invention.

I claim:

1. For sealed cabinetry, a self-adjusting pressure sealing apparatus adapted to be removably attached over an opening in a cabinet wall wherein a cover panel peripheral edge portion is adapted to engage a cabinet panel with a deformable sealing strip on one of the panels for forming a tight seal therebetween,

a first plurality of clamp means on one of the panels for releasably engaging the other panel and pressing the panels together,

frame means adjacent the cover panel with a second plurality of support locations means spaced apart on said frame means adjacent and facing the peripheral edge portions of the cover panel,

the improvement including in combination,

a second plurality of yieldable spring mounting means on said cover panel disposed in operative engagement with said location means, respectively, and yieldably strongly urging said cover panel toward said frame means, said mounting means including an inwardly extending pin member movably extending through said location means for providing relative movements between the cover panel and the frame means.

2. The apparatus of claim **1** wherein said first and second pluralities are the same and each clamp means is located adjacent a spring mounting means.

3. The apparatus of claim **1** wherein every spring mount means is located immediately adjacent one of the clamp means, respectively.

4. The apparatus of claim **1** further including a plurality of cover panels respectively covering a like plurality of openings in the front panel, unitary portions of the sealing strip extending between adjacent openings such that respective adjacent cover panels' peripheral edge portions engage said sealing strip unitary portion.

5. The apparatus of claim **1** wherein each said spring mount means further includes,

stop means on an inward end portion of each member,

a spring disposed between each location means and said stop means, respectively, and yieldably urging the frame and the cover panel, together with sufficient urging such that the frame and any apparatus on the frame are supportable by said cover panel but permit said cover panel to move with respect to the frame as the clamp means are actuated whereby the two panels are everywhere along the peripheral edge portions evenly compressing the deformable sealing strip for forming a continuous seal along the cover panel periphery.

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JAMES T. McCALL, *Primary Examiner.*

U.S. Cl. X.R.

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